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NOTICE OF ALLOWANCE AND FEE(S) DUE

530 7590 10/31/2008

LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090

EXAMINER

FAULK, DEVONA E

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 10/31/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,684	11/29/1999	KIYOFUMI INANAGA	7246/57889	8380

TITLE OF INVENTION: AUDIO REPRODUCING APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$0	\$0	\$1510	02/02/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

530 7590 10/31/2008

**LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$1510	\$0	\$0	\$1510	02/02/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
FAULK, DEVONA E	2614	700-094000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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530	7590	10/31/2008	EXAMINER	
LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090			FAULK, DEVONA E	
			ART UNIT	PAPER NUMBER
			2614	
DATE MAILED: 10/31/2008				

Determination of Patent Term Extension under 35 U.S.C. 154 (b)

(application filed after June 7, 1995 but prior to May 29, 2000)

The Patent Term Extension is 0 day(s). Any patent to issue from the above-identified application will include an indication of the 0 day extension on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Extension is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

09/424,684

Examiner

DEVONA E. FAULK

Applicant(s)

INANAGA ET AL.

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 7/28/08.
2. ☒ The allowed claim(s) is/are 1,2 and 8.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Note to applicant: The examiner's art unit is no longer 2615, it has been changed to 2614 so future correspondence should use 2614.

Response to Arguments

1. Applicant's arguments filed 7/28/08 have been fully considered but they are not persuasive.
2. The applicant agreed to an examiner's amendment to place the claims in allowable form.
3. Claims 3-7 are cancelled.

Information Disclosure Statement

4. The information disclosure statement filed 8/27/07 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

EXAMINER'S AMENDMENT

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruno Polito (Reg. NO. 38,580) on 10/23/08.

The claims are to be amended as follows:

Claims 9,10: CANCEL.

Claim 1 is to be amended to recite the following:

An audio reproducing apparatus, comprising:

A distributing unit for receiving input audio signals of N channels (where $N \geq 5$, N is an integer) including at least a first channel signal, a second channel signal, a third channel signal, a fourth channel signal, ~~and~~ a fifth channel signal **including only low frequency content and an additional channel signal being the center channel;**

said distributing unit **respectively combines said additional channel signal with said first channel signal and said second channel signal, and said distributing unit** processes said fifth channel signal to produce combined signals of N-1 channels by respectively adding said fifth channel signal to at least said first channel signal, said second channel signal, said third channel signal and said fourth channel signal, wherein said combined signals represent the positions of sound images;

a first signal processing unit for processing the combined signals of N-1 channels so as to produce first processed signals having an equivalent sound field of M (where $M < N-1$, M is an integer) speakers; and

Art Unit: 2615

a second signal processing unit for equivalently processing the first processed signals corresponding to transfer functions from the M speakers to both ears of the listener and producing output audio signals,

wherein the output audio signals of the second signal processing unit are reproduced with the M speakers.

Claim 2 is to be amended to recite the following:

An audio reproducing apparatus, comprising:

a distributing unit receiving input audio signals of N channels (where $N \geq 5$, N is an integer) including at least a first channel signal, a second channel signal, a third channel signal, a fourth channel signal, ~~and~~ a fifth channel signal **including only low frequency content and an additional channel signal being the center channel;**

the distributing unit **respectively combining said additional channel signal with said first channel signal and said second channel signal, and the distributing unit** including a variable attenuating unit for receiving the fifth channel signal, whereby a varying amount of the fifth channel signal is added to at least said first channel signal, said second channel signal, said third channel signal and said fourth channel signal to produce combined signals of N-1 channels, said combined signals represent the positions of sound images;

a first signal processing unit for processing the combined signals of N-1 channels so as to produce first processed signals having an equivalent sound field of M (where $M < N-1$, M is an integer) speakers; and

a second signal processing unit for equivalently processing the first processed signals corresponding to transfer functions from the M speakers to both ears of the listener and producing output audio signals,

wherein the output audio signals of the second signal processing unit are reproduced with the M speakers.

6. Claims 1,2 and 8 are allowed.

The following is an examiner's statement of reasons for allowance: Regarding claims 1 and 2, prior Mouri (US 5,799,094) discloses an audio reproducing apparatus (Figure 1), comprising: A distribution circuit (21a-21i; Figure 1) receiving input audio signals of N channels including at least front and back left channel directional components, front and back right channel directional components (Figure L,R,SL,SR), and a sound field image signal (C, figure 1); Said distribution circuit processing said sound field image signal to produce at least two processed signals which are added to at least some of said input audio signals, whereby said distributing circuit generates audio signals of N-1 channels that represent the positions of sound images at least corresponding to the front and back left channel directional components and the front and back right channel directional components as sound image components (Figure 1) and wherein the distributing circuit includes a variable attenuating circuit receiving the sound field image signal, whereby varying amounts of the sound field image signal are

Art Unit: 2615

added to at least some of the audio signals of N channels; said distributing circuit outputting signals that represent positions of the sound images of N-1 channels (Figure 1, attenuator)..

Prior art Sotome et al. (US 6,850,621) discloses a three dimensional sound reproducing apparatus and a three-dimensional sound reproduction method including a first signal processing circuit for processing audio signals of N-1 output (Figure 15, 30 sound localization unit). Prior art in further view of Matsuo (US 6,553,121) discloses a three dimensional acoustic processor which uses linear predictive coefficients.

Regarding claim 1, the prior art or combination thereof fails to disclose or make obvious **(specifically the language in bold print)** a distributing unit for receiving input audio signals of N channels (where $N \geq 5$, N is an integer) including at least a first channel signal, a second channel signal, a third channel signal, a fourth channel signal, ~~and~~ a fifth channel signal including only low frequency content and an additional channel signal being the center channel;

said distributing unit respectively combines said additional channel signal with said first channel signal and said second channel signal, and said distributing unit processes said fifth channel signal to produce combined signals of N-1 channels by respectively adding said fifth channel signal to at least said first channel signal, said second channel signal, said third channel signal and said fourth channel signal.

Art Unit: 2615

Regarding claim 2, the prior art or combination thereof fails to disclose or make obvious **(particularly the language in bold print)** distributing unit receiving input audio signals of N channels (where $N \geq 5$, N is an integer) including at least a first channel signal, a second channel signal, a third channel signal, a fourth channel signal, ~~and~~ a fifth channel signal including only low frequency content and an additional channel signal being the center channel;

the distributing unit respectively combining said additional channel signal with said first channel signal and said second channel signal, and the distributing unit including a variable attenuating unit for receiving the fifth channel signal, whereby a varying amount of the fifth channel signal is added to at least said first channel signal, said second channel signal, said third channel signal and said fourth channel signal to produce combined signals of N-1 channels.

Therefore the prior art or combination thereof fails to disclose or make obvious an audio reproducing apparatus as claimed.

Claim 8 is allowed to dependency on claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/
Examiner
Art Unit 2614
10/23/2008

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614

Application/Control Number: 09/424,684
Art Unit: 2615

Page 9